

12.3.54

SITE HAZARD ASSESSMENT

REICHOLD CHEMICAL
KING COUNTY, WASHINGTON

Prepared by:

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Submitted to:

Washington Department of Ecology
Toxics Cleanup Program
Mail Stop PV-11
Olympia, Washington 98504

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USEPA SF



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This site hazard assessment was performed for the Washington Department of Ecology, and the site scored using the WARM ranking method. No sampling was performed as a part of this investigation; however, files were reviewed at the Department of Ecology, a site walk-through was conducted and a Phase II site Assessment reviewed which was developed for Lone Star Northwest by Parametrix, Inc.

The property in questions was operated by Reichold Chemical in the 1940 and 1950s as a manufacturing plant for wood-treating chemicals, including pentachlorophenol, and possibly creosote and chrome-copper-arsenate or some other metal-based wood preserving chemicals. Reichold utilized a surface impoundment or pit, possibly for the lime neutralization of hydrochloric acid. Other operators which have had industrial facilities at the site include Kaiser, which used the site for cement product storage, and had two surface impoundments on the site for disposal of sand, gravel and cement slurries. In addition, MRI Corporation had a metal reclamation and plating operation at this site, with two surface impoundments used for disposal of plating effluents.

QUANTITY

For the purposes of this assessment, these four surface impoundments or pits should be considered for scoring. Based on maps provided in several reports, the Reichold Chemical pit was an irregular shape, approximately 200 ft X 120 ft and of an effective 6-ft depth (5300 cubic yards). The MRI pit shown on maps was approximately 110 ft by 150 ft and of unknown depth. Assuming a 3-ft depth, this pit had approximately 1833 cubic yards of material in it. No information is available in the files regarding the size of the Kaiser pit, but it may be assumed that this pit did not have hazardous constituents in it, only sand, gravel, and possible lime for the cement manufacturing process. These quantities are conservative and do not reflect the potential that the impoundments were deeper, or that they operated as evaporative lagoons and much greater quantities may have been disposed.

AVAILABLE SAMPLING INFORMATION

Numerous reports are available in the files from the Washington Pollution Control Commission documenting releases of phenolic compounds, formalin, and glues to the Duwamish River, as well as documenting worker problems with ammonia smells in the vicinity of the plant.

In 1985, soil sampling was conducted by Parametrix, Inc. for the Port of Seattle in order to determine if there would be health and safety problems for workers during property development. Soil sampling locations included borings in the vicinity of the Reichold Pit, the Kaiser Cement truck washout area, and the Reichold Tank Farm. Borings were five feet deep. Field pH readings and field OVA readings were taken. The pH readings ranged from 5.3 to 9.7 and OVA readings often "pegged" the meter at >1000 ppm total organics. Analyses were conducted of soil for priority pollutant metals, semi-volatile compounds, volatile compounds and pesticides and PCBs. Ranges of detected compounds are presented below:

Arsenic	20-51 mg/kg
Chromium	5.8-6.4 mg/kg
Copper	4.4 - 17.1 mg/kg
Nickel	3.7-11.4 mg/kg
Mercury	<0.1-0.2 mg/kg
Volatile cmpds.	None detected
Phthalates	<0.08-.93 mg/kg

A second round of soil sampling and installation of ground water monitoring wells was undertaken by Parametrix for Lone Star in 1990. This investigation focussed on the eastern edge of the property boundary and in the area of the former Kaiser Cement slurry pit. Additional samples were taken in the vicinity of the former Reichold Chemical Tanks. Soil samples were analyzed for TPH, TOX, total metals and TCLP metals. Ground water samples were analyzed for volatile and semi-volatile organic compounds, and metals.

Results of the 1990 sampling event indicate widespread contamination of soils and ground water with a variety of chemicals. Table 1 shows the range of these contaminants against Ecology's MTCA Cleanup Levels.

RECOMMENDATIONS

Although some sampling has been conducted at the site, it appears that additional sampling is necessary to characterize the MRI operations (probably the source of the silver in the soil samples), and to better characterize the movement of contaminants between the ground water under the site and the Duwamish River. The tidally influenced ground water under the site could be leaching contaminants to the river where its impact could be found in the Lower Duwamish River environment. Additional soil borings and monitoring well installation may be warranted.

TABLE 1

SOIL AND GROUND WATER SAMPLING RESULTS
1990 SAMPLING
REICHOLD CHEMICAL, SEATTLE, WASHINGTON

COMPOUND	CONCENTRATION RANGE	MTCA CLEANUP LEVEL*
<u>SOIL</u>		
TOX	<4 - 23 mg/kg	N/A
TPH	28 - 10,000 mg/kg	200 mg/Kg
ARSENIC	<0.5 - 150 mg/kg	20 mg/Kg
MERCURY	<0.15 - 0.26 mg/kg	1.0 mg/Kg
<u>GROUND WATER</u>		
pH	5.97 - 6.3	N/A
ACETONE	25 ug/l	800 µg/L
CHLOROFORM	3 ug/l	590 µg/L
2-CHLOROPHENOL	28 ug/l	N/A
2,4-CHLOROPHENOL	51 ug/l	N/A
NAPHTHALENE	86 ug/l	32 µg/L
2,4,6-TRICHLOROPHENOL	49 ug/l	N/A
PENTACHLOROPHENOL	2,800 - 3,000 ug/l	1 µg/L
ARSENIC	<0.005 - 0.33 mg/l	5.0 µg/L
SILVER	0.27 - 0.43 mg/l	

* MTCA Cleanup Levels for both Method A & B where appropriate. Some Method B levels not available for this assessment

SITE HAZARD ASSESSMENT SHEETS

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
TOXICS CLEANUP PROGRAM

SITE HAZARD ASSESSMENT DATA COLLECTION SUMMARY SHEETS
FOR
WASHINGTON RANKING METHOD

Site

Name: Reichold Chemical/Lone Star Cement

Location: 5900 W. Marginal Way, Seattle, WA

Site owner/operator: Lone Star Industries, Inc.

Address: One Greenwich Plaza/P.O. Box 5050, Greenwich, CT 06836

Any other known PLP(s): Kaiser Cement Corp.

Address: 300 Lakeside Dr., Oakland, CA 94612

Site Number: _____

Date(s) of field site hazard assessment: _____

Samples or field measurements: _____ soil

_____ surface water

_____ air _____ ground water

(Attach copies of pertinent sampling and analytical data, as well as all other supporting documentation.)

Photographs: _____

Weather: _____

Lead inspector: _____

Other inspectors: _____

Signature: _____

PART I: Hazardous Substances

NOTE: Page numbers (e.g. SW-2) shown in parentheses throughout this checklist refer to the WARM Scoring Manual. WK- numbers refer to pages of the new scoring sheets (not those in the scoring manual).

A. LIST

List hazardous substances, known or suspected (check k or s), currently at the property, or that have been previously (check c or p) at the property (WK-2,3);

<u>Hazardous Substance</u>	<u>K S C P</u>	<u>Quantity</u>	<u>Units</u>
1. <u>Formaldehyde</u>	<u>KP</u>	<u>52,000</u>	<u>16/day</u>
2. <u>Phenol</u>	<u>KP</u>	<u>56,000</u>	<u>16/day</u>
3. <u>O-creosol</u>	<u>KP</u>	<u>56,000</u>	<u>16/day</u>
4. <u>Chlorine</u>	<u>KP</u>	<u>5,000</u>	<u>16/day</u>
5. <u>Pentachlorophenol</u>	<u>KP</u>	<u>5,000</u>	<u>16/day</u>
6. <u>Hydrochloric acid</u>	<u>KP</u>	<u>13,000</u>	<u>16/day</u>
7. <u>Metals from CCA process</u>		<u>Unknown</u>	
8. _____		_____	_____
9. _____		_____	_____

Additional? _____ (list on attachment)

By which routes are these available? Unknown, these materials were used in process operations.

<u>Number (from above)</u>	<u>Surface Water</u>	<u>Air</u>	<u>Groundwater</u>
1. <u>5</u>			<u>x</u>
2. <u>7</u>	<u>x</u>	<u>x</u>	<u>x</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____

B. SOURCES

Check those known or observed (WK-3):

_____ drums or other containers
_____ electrical transformers
_____ above ground tanks
_____ below ground tanks
_____ ponds, pits, or other impoundments
_____ pipelines (other than water, sewer, or gas)
_____ floor drains
_____ exterior drains for rainwater, surface waters, spills, etc.
_____ other? Identify: None

C. INDICATORS

Check those known or observed:

_____ discolored soils
_____ disturbed soils
_____ discolored standing water
_____ unusual or noxious odors
_____ sick or dead vegetation
_____ groundwater monitoring wells
_____ other? Identify: None

If any are checked in B or C, explain details including exact locations (identify location in a map or drawing).

Additional
information: _____

PART II: Releases

A. KNOWN OR SUSPECTED RELEASES

List those hazardous substances identified (by number) in I.A. which are known, or suspected, to have been released (WK-2,3):

<u>Substance (#)</u>	<u>Quantity Released</u>	<u>Units</u>	<u>Medium Released To</u>
<u>Formalin</u>	<u>8000</u>	<u>Gallons</u>	<u>Unknown</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

Additional
information/reference? Release of phenolic material in flow carried in a ditch
along the south fence/letter. - Several releases of phenolic effluent which
resulted in fish kills in the Duwamish River.

B. SOURCES AND IMPACTS

(Pages SW-5,6; A-9,10; GW-6,7)

List those hazardous substances identified (by number) in II.A. and identify the source and impact:

<u>Substance No.</u>	<u>Source</u>	<u>Impacts/affects To</u>	<u>Area</u>
<u>1</u>	<u>Tank</u>	<u>Soil/surface water</u>	<u>Unknown</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

Additional
information/reference? Unknown

III. Migration Potential

A. CONTAINMENT--LANDFILLS

(SW-7; A-12; GW-8,9)

Present? No How many? _____

Check those that apply:

1. ☐ An engineered, maintained run-on/run-off control system
2. ☐ An engineered/maintained cover without ponding
3. ☐ Unmaintained run-on/runoff control system or cover
4. ☐ No run-on/runoff control or no cover
5. ☐ Uncontaminated soil cover greater than 6" thick
6. ☐ Uncontaminated soil cover less than 6" thick
7. ☐ Contaminated soil used as cover
8. ☐ A functioning vapor collection system
9. ☐ Mixing or agitation used
10. ☐ No liner
11. ☐ Single clay or compacted soil liner
(permeability _____ cm/sec)
12. ☐ Single synthetic liner (permeability _____ cm/sec)
13. ☐ Double liner system (permeability _____ cm/sec)
14. ☐ Leachate collection system, maintained and functioning
15. ☐ Leachate collection system, unknown condition or not functioning
16. ☐ Liquid wastes may have been disposed of
17. ☐ Liquid wastes were disposed of in landfill
18. ☐ Reliable evidence no liquid wastes were disposed

Additional
comments: _____

B. CONTAINMENT--SURFACE IMPOUNDMENTS

(SW-7,8; A-13; GW-10,11)

Present At one time How many? 2 No longer present.

Check those that apply:

1. ☐ The dike is apparently sound
2. ☐ The dike is regularly inspected and maintained
3. ☐ There is evidence of failure, erosion, slumping, or release of contents
4. ☐ Two feet of freeboard maintained automatically
5. ☐ The freeboard is manually controlled so that there is at least 2 feet of freeboard
6. ☐ Evidence of insufficient freeboard (<2 ft.)
7. ☐ A maintained cover
8. ☐ Unmaintained cover, no cover
9. ☐ No liner
10. ☐ Single synthetic liner
11. ☐ Single clay or compacted soil liner
12. ☐ Double liner
13. ☐ Working leak detection system
14. ☐ Evidence of loss of fluid (other than by evaporation)

Additional

comments: Around 1955-56, Reichold built two lagoons. The plant was closed in 1961. A 1981 photographic analysis indicates that the lagoons were filled in. It is unknown if the sludges were removed.

C. CONTAINMENT--DRUMS AND SMALL CONTAINERS (SW-9; A-11; GW-11)

Present No How many? _____

Check those that apply:

1. No functional containment
2. There is secondary containment capacity for the total volume of containers
3. There is secondary containment with capacity for at least 110% of volume of the largest container
4. The secondary containment is less than 110% of the volume of the largest container
5. The containers are stored in single, or double layers on pallets, or in racks
6. The containers are stored in an unstable manner
7. Some containers are open or have visible liquid
8. Some containers are leaking
9. Containers are protected from weather
10. Containers showing deterioration
11. Containment surface is impervious
12. Containment surface has cracks or semi-permeable
13. No base material/permeable base such as gravel/base materials unknown
14. Containment is regularly inspected and maintained
15. Evidence of containment failure

Additional
comments: _____

D. CONTAINMENT--STORAGE TANKS

(SW-9; A-11; GW-11)

Present No longer How many? _____

Check those that apply:

1. _____ Secondary containment with a capacity of 110% of the volume of the tanks
2. _____ Secondary containment at least 50% of the volume of all tanks
3. _____ Containment system with capacity for at least 10% of volume of containers or tanks
4. _____ No containment, or less than 10% capacity
5. _____ Tank volumes maintained
6. _____ Automatic controls used for volume maintenance
7. _____ Tanks are covered
8. _____ Uncovered tanks have aeration, mixing, or heating of tank contents
9. _____ Containers sealed, protected
10. _____ Containers sealed, not protected
11. _____ Containers deteriorated
12. _____ Containers leaking
13. Record the #s of above which apply only to above ground tank

14. Record the #s of above which apply only to below ground tanks

15. Record the #s of above which apply to both above and below ground tanks:

Additional
comments: _____

(SW-10; A-13; GW-12,13)

Check those that apply:

- Additional
comments:

F. CONTAINMENT--SPILLS, DISCHARGES, AND CONTAMINATED SOIL
(SW-10,11; A-13,14; GW-13)

Check those that apply:

1. ☐ Spill, discharge, or contaminated soil only in the subsurface at the site--including dry wells, drain fields, leaking underground storage tanks
2. ☐ Soil contamination that has been covered partially excavated and filled with at least 6 inches of clean soil
3. ☐ Soil contamination that has been covered or partially excavated and filled with less than 6 inches of clean soil
4. ☐ Uncontaminated soil cover >2 feet thick
5. ☒ No cover; or ☐ Cover <2 feet, but > 6" thick
6. ☐ Spill, discharge, or contaminated soil present at the surface in an area with maintained run-on/run-off controls
7. ☐ Spill, discharge, or contaminated soil present at the surface in an area with unmaintained run-on/run-off controls
8. ☒ Spill, discharge, or contaminated soil present at the surface with no run-on/run-off controls or unknown controls
9. ☐ Contaminated soil has been disturbed or excavated and stored above grade
10. ☐ A functioning vapor recovery system
11. ☐ No vapor recovery system

Additional

comments: There was a drainage ditch on the south end of the site, through which phenolic wastes were discharged. However, in 1955, the ditch was filled in and the flow diverted to an impounding basin.

G. CONTAINMENT--SITE CHARACTERISTICS

(SW-11,12; A-6; GW-14; WK-5,6,8)

1. How would you evaluate the site soils? Circle predominant textural class.

_____ Sand, gravel, sandy gravel, well-graded sand, well-graded gravel, gravelly sand, gravelly sand loam, silty sandy loam?

¹x _____ Poorly-graded sands with fines, silt-sand mixtures, loam, silt loam, sandy silt loam, clayey sand, clay sand loam?

_____ Clayey sands, sand-clay mixtures, clayey gravels, clay-sand-gravel mixtures, inorganic silts, clayey silt loam, silty clay loam, porous rock outcrop, sandy silty clay, sandy clay loam?

_____ Clay (organic and inorganic), clay loam, rock outcrop, peat, peaty clay?

Is the above based on personal observation, lab analysis, or professional judgment by a soil expert? (circle)

2. Total annual precipitation= 34.8 in./yr (SW-12; WK-5)
3. Max. 2-yr/24-hr precip.= 2.2 inches (SW-14; WK-5)
4. Net precipitation (see 2.2, GW-13)= 18.7 in. (WK-9)
5. Is the site not in a flood plain? _____ (SW-14; WK-5)
 Is the site in a 500 year flood plain? _____
 Is the site in a 100 year flood plain? x _____
 Flood Insurance Rate Map Comm. Panel No. _____
6. ²What is the terrain slope to the nearest surface water?
<1 % (SW-14,15; WK-6)
7. What is the subsurface hydraulic conductivity?
Sand/silt cm/sec (GW-14; WK-9)
8. What is the vertical depth from the deepest point of known contamination to ground water? 0 feet³ (GW-15; WK-9)

Additional

comments: ¹Based on the findings of a Shannon & Wilson Report.

²The site is located on the fill deposits of the Duwamish Waterway.

³Available data does not show known contamination.

IV. Targets

A. DISTANCE TO SURFACE WATER (SW-16; WK-6)

1. What surface water(s) (lake, stream, river, pond, bay, etc.) is/are within 10,000 feet (downgradient) of the site?

<u>Name</u>	<u>Dist. - ft.</u>	<u>Obs.</u>	<u>Meas.</u>
Duwamish River	0 (Adjacent)		

None? _____ Comments _____

2. What drinking water intakes are within 2 miles of the site? (all lake intakes, river intakes downstream only) (SW-12; WK-6)

None? x

<u>Source</u>	<u>Location</u>	<u>Pop. Served</u>

3. How much acreage (anywhere) is irrigated by surface water intakes (downstream only) or wells (anywhere) within 2 miles of the site? (SW-16; GW-18; W/S 5; WK-6,9)

None? x

SURFACE WATER: Acres _____ (1600 acres max.)

Source(s) _____;

GROUNDWATER: Acres _____ (4500 acres max.)

Source(s) _____

4. What is the distance to the nearest fishery resource (total of overland distance plus downgradient distance)? (SW-17; WK-6)

Over 10,000 feet? _____ Distance if less than 10,000 feet? Adjacent ft. to the Duwamish River.

5. What are the names of, and the distances to the nearest sensitive environments (total of overland distances plus downgradient distances)? (SW-18; A-15; WK-6)

Over 10,000 feet? x Names and distance if less than 10,000 feet:
For surface water route, use Duwamish

6. Is the aquifer a federally-designated sole source aquifer? No (GW-16; WK-9)

7. Is the ground water used for: (GW-16; WK-9)

_____ private supply
_____ public supply
_____ irrigation of human food crops or livestock
_____ non-food (human) vegetation
Brackish x not used due to natural contaminants
_____ ground water not used, but usable

8. Distance to nearest drinking water well? >10,000 feet (GW-17; WK-9)

9. Is there an alternate source available to groundwater for private or public water supply? (WK-9) Yes

10. Population served by drinking water wells within 2 miles 0? (GW-17; WK-9)

11. Distance to the nearest population? 2,300 feet (A-15, 16; WK-8)

12. Population within one-half mile radius? 1,161 (A-16; WK-8)

Additional
comments: _____

SCORING PACKAGE

WORKSHEET 1
SUMMARY SCORE SHEET

Site Name: Reichold Chemical

Site Location: (City, County, or Section/Township/Range)

5900 West Marginal Way
Seattle, WA

Site Description: (Include management areas, compounds of concern, and quantities)

The property in questions was operated by Reichold Chemical in the 1940 and 1950s as a manufacturing plant for wood-treating chemicals, including pentachlorophenol, and possibly creosote and chrome-copper-arsenate or some other metal-based wood preserving chemicals. Reichold utilized a surface impoundment or pit, possibly for the lime neutralization of hydrochloric acid. Other operators which have had industrial facilities at the site include Kaiser, which used the site for cement product storage, and had two surface impoundments on the site for disposal of sand, gravel and cement slurries. In addition, MRI Corporation had a metal reclamation and plating operation at this site, with two surface impoundments used for disposal of plating effluents.

Quantity: Impounds are 200 X 120 X 6 ft deep and 110 X 150 by assumed 3 ft deep = 7,167 cubic yards of waste still onsite. Scored as Landfills, since the impoundments have been covered.

Special Considerations: (Include limitations in site file data, data which cannot be accommodated in the model, but which are important in evaluating the risk associated with the site)

ROUTE SCORES:

Ground Water/Human: 31.9

Overall Rank: _____

Surface Water/Human: 26.8

Air/Human: 21.0

Air/Environmental: 3.2

Surface Water/Environmental: 66.7

WORKSHEET 2
ROUTE DOCUMENTATION

SURFACE WATER ROUTE

List substances to be considered for scoring.

Source: _____

Arsenic + silver

Explain basis for choice of substances to be used in scoring.

analytical data

List management units to be considered in scoring:

Source: _____

contaminated soil

Explain basis for choice of unit used in scoring.

AIR ROUTE

List substances to be considered for scoring.

Source: _____

Arsenic
Silver

Explain basis for choice of substances to be used in scoring.

Present in test pits

List management units to be considered in scoring:

Source: _____

Contaminated soil

Explain basis for choice of unit used in scoring.

Analytical data

WORKSHEET 2 (CONTINUED)
ROUTE DOCUMENTATION

GROUND WATER ROUTE

List substances to be considered for scoring.

Source: _____

Arsenic
Silver
Pentachlorophenol

Explain basis for choice of substances to be used in scoring.

analytical data

List management units to be considered in scoring:

Source: _____

contaminated soil

Explain basis for choice of unit used in scoring.

WORKSHEET 3
SUBSTANCE CHARACTERISTIC WORKSHEET
FOR MULTIPLE UNIT/SUBSTANCE SITES

	Combination 1	Combination 2	Combination 3
Unit: Substance: <u>AIR ROUTE</u> Human Toxicity/Mobility Value: Environmental Toxicity/Mobility Value: Containment Value:			
Air Human Subscore: Air Environmental Score:			
<u>SURFACE WATER ROUTE</u> Human Toxicity Value: Environmental Toxicity Value: Containment Value:			
Surface Water Human Subscore: Surface Water Environmental Subscore:			
<u>GROUND WATER ROUTE</u> Human Toxicity/Mobility Value: Containment Value:			
Ground Water Subscore:			

**WORKSHEET 4
SURFACE WATER ROUTE**

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Std.		Chronic Toxicity <i>Acute</i>		Acute Toxicity <i>Chronic</i>		Carcinogenicity		
	(µg/l)	Value	mg/kg/day	Value	mg/kg-bw	Value	WOE	Potency Factor	Value
1. Arsenic		6		5		5			7
2. Silver		6		0		3			0
3.									
4.									
5.									
6.									

Source: _____

Highest Value: 7

+2 Bonus Points?: 2

Value: 9

1.2 Environmental Toxicity

Substance	Acute Criteria (µg/L)	Non-human mammalian acute toxicity (mg/kg)	Value
1. Arsenic			4
2. Silver			8
3.			
4.			
5.			
6.			

Source: _____ Value: 8

1.3 Substance Quantity

Explain basis: 7167 yds³

Source: 1 Value: 8

2.0 MIGRATION POTENTIAL

2.1 Containment

Explain basis: NO runoff-runoff controls

Source: _____ Value: 10

2.2 Surface Soil Permeability: sand-silt

Source: _____ Value: 3

2.3 Total Annual Precipitation: 34.8 in

Source: _____ Value: 3

2.4 Maximum 2-Year 24-Hr Precipitation: 2.0-2.5

Source: _____ Value: 3

2.5 Flood Plain: 100-yr

Source: _____ Value: 2

2.6 Terrain Slope: < 1%

Source: _____ Value: 1

WORKSHEET 4 (CONTINUED)
SURFACE WATER ROUTE

3.0 TARGETS

3.1 Distance to Surface Water: adjacent

Source: _____ Value: 10

3.2 Population Served within 2 miles: 0

Source: _____ Value: 2

3.3 Area Irrigated by Sources within 2 miles: 0

Source: _____ Value: 0

3.4 Distance to Fishery Resource: adjacent

Source: Value: 12

3.5 Distance to Sensitive Environment: adjacent

Source: _____ Value: 12

List: _____

4.0 RELEASE

Explain basis: phenol release

Source: 0 Value: 5

WORKSHEET 5 (CONTINUED)
AIR ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Introduction - please review before scoring

1.2 Human Toxicity

Substance	Air Std.		Chronic Toxicity		Acute Toxicity		Carcinogenicity		
	$\mu\text{g}/\text{m}^3$	Value	$\text{mg}/\text{kg}/\text{day}$	Value	$\text{mg}/\text{kg}-\text{bw}$	Value	WOE	Potency Factor	Value
1. Arsenic		0		0		0			9
2. Silver		0		0		0			0
3. TPH		0		5		3			0
4. as diesel									

Source: _____

Highest Value: 9

+2 Bonus Points?: 2

Toxicity Value: 11

1.3 Mobility

1.3.1 Gaseous Mobility

Vapor Pressure: _____
Value: _____

Source: _____

1.3.2 Particulate Mobility

Soil Type: Sandy loam
Erodibility: 8.8
Climatic Factor: 1-10
Particulate Mobility Potential Value: 1

Source: _____

1.4 Final Human Health Toxicity/Mobility Matrix:

Value: 6

1.5 Environmental Toxicity/Mobility

Substance	Non-human mammalian Acute Toxicity	Value	Mobility	Value
1. Arsenic		0	1	
2. Silver		0	1	
3. TPH		3	1	
4.				
5.				
6.				

Environmental Toxicity Mobility Matrix:

Source: 1 Value: 2

1.6 Substance Quantity: 7167 cubic yards

Source: _____ Value: 8

WORKSHEET 5
AIR ROUTE

2.0 MIGRATION POTENTIAL

2.1 Containment: No cover

Source: Value: 10

3.0 TARGETS

3.1 Nearest Population: 2300 ft

Source: Value: 6

3.2 Nearest Sensitive Environment: 210,000 ft

Source: Value: 0

List:

3.3 Population within 1/2 mile: 1161 ✓

Source: Value: 34

4.0 RELEASE: None measured

Source: 1 Value: 5

**WORKSHEET 6
GROUND WATER ROUTE**

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Std.		Chronic Toxicity		Acute Toxicity		Carcinogenicity		
	(µg/l)	Value	mg/kg/day	Value	mg/kg-bw	Value	WOE	Potency Factor	Value
1. Arsenic		6		5		5			7
2. Silver		6		0		3			0
3. Pentachlorophenol		10		0		1			4
4. Naphthalene		6		5		3			0

Source: _____

Highest Value: 10

+2 Bonus Points?: 2

Value: 12

1.2 Mobility

Substance: A 3 3
P 1
N 1

Source: _____ Value: 3

1.3 Substance Quantity

Explain basis: 7167 yds³

Source: _____ Value: 8

2.0 MIGRATION POTENTIAL

2.1 Containment

Explain basis: No containment

Source: 1 Value: 10

2.2 Net Precipitation: 18.7

Source: _____ Value: 2

2.3 Subsurface Hydraulic Conductivity: sand/silt

Source: _____ Value: 3

2.4 Vertical Depth to Ground Water: 0 ft-contaminated

Source: _____ Value: 8

3.0 TARGETS

3.1 Ground Water Usage: none-not useable-brackish

Source: _____ Value: 1

3.2 Distance to Nearest Drinking Water Well: > 2 miles

Source: _____ Value: 0

3.3 Population Served with 2 miles: 0

Source: _____ Value: 0

3.4 Area Irrigated by Wells within 2 miles: 0

Source: _____ Value: 0

4.0 RELEASE

Explain basis: Analytical data

Source: 1 Value: 5

WORKSHEET 7
SOURCES USED IN SCORING

1. Phase II Site Assessment, Parametrix, Inc, August 1990
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.